Instructions Manual for Articulated Video Endoscope

Eagle Eye

This manual describes how to operate the Articulated Video Endoscope Eagle Eye

High Quality, Articulated Digital Video Endoscope

Table of Contents

1. Items included in delivery kit …….. 4
2. Safety and maintenance Instructions ……. … 5
3. Description of Device ..……..……... 6
4. Description of Digital Video Recorder (DVR) …….. 7
5. Flow chart of Digital Video Recorder ……..…… 8
6. How to operate the device ……..…… 10
7. How to run with external Power Supply & external Monitor ..…. 12
8. Adjustment of Working Distance (Optical Magnification) ……. 13
9. Installing the 90º Mirror Adapter ……..…. 13
10. Specification ……..……..…….. 14
11. Warranty information…….. 15
12. Notes ……..…….. 16

1. Items included in delivery kit

Eagle Eye is delivered in a robust water resistant sealed case with automatic pressure equalization valve and 2-levels foam inlay.

Automatic Pressure Equalization Valve

Following items are included in your Eagle Eye system:

- Eagle Eye, Articulated Video Endoscope with 5.6” LCD
- 2 pcs. Sony battery units
- 2 pcs. battery chargers with Instructions manual and mains cable
- SD Memory card
- Focus adjustment tool
- 90º degrees mirror adapter
- BNC video cable for external monitor
- Power supply 12VDC, Center +
- Instructions manual for Eagle Eye
- Heavy duty water resistant Transport Case with two levels foam inlay

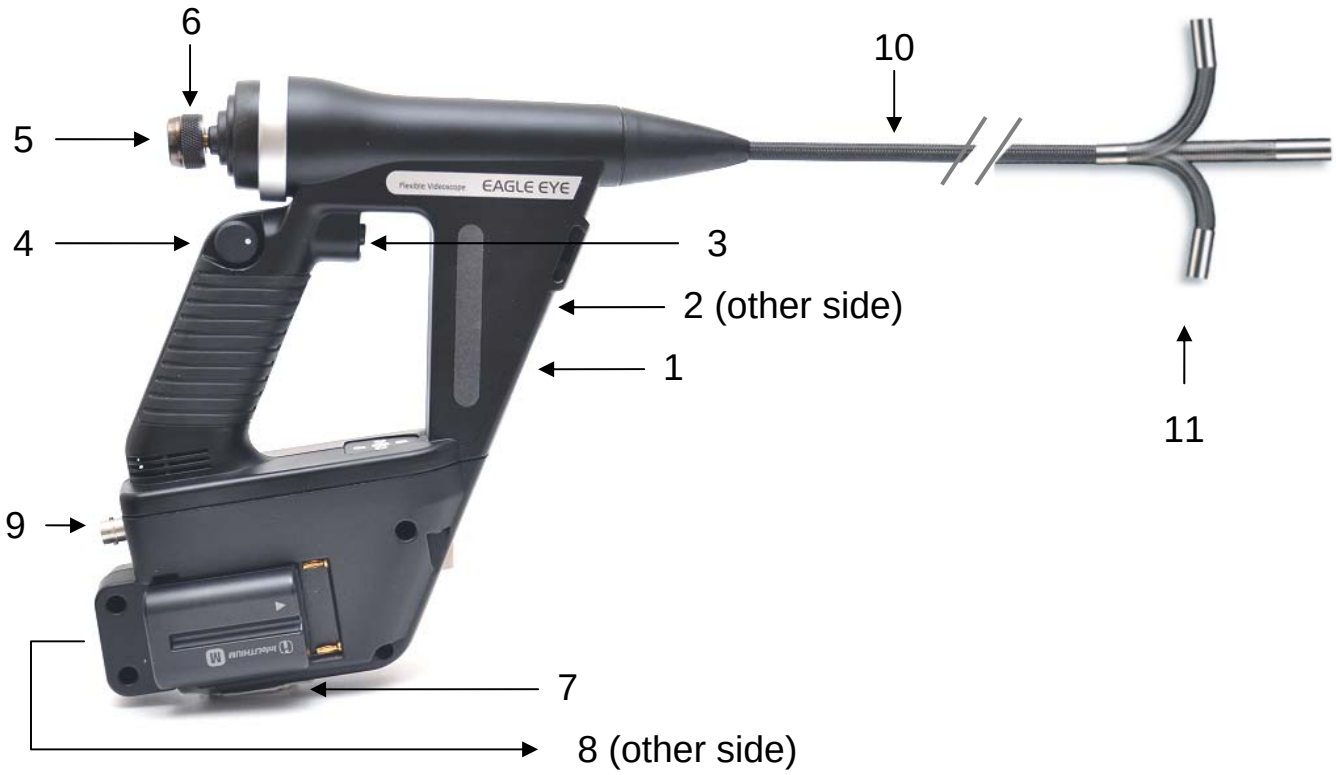
2. Safety and maintenance Instructions

- Do not operate the video endoscope in explosive atmospheres, such as in the presence of flammable liquids, gases, or heavy dust.
- This equipment is intended for use in industrial applications.
- Never use this tool for inspecting or examination of human body or animals!
- Do not use the tool around corrosive chemicals which can damage the equipment.
- Keep the tool dry, clean and free from oil, water and grease.
- Use a mild detergent and a soft cleaning tissue to clean the insertion tube or body of the instrument.
- Keep optical surfaces of the equipment clean. Use Lens Cleaning Tissue and Pure Ethanol or Isopropyl for cleaning optical surfaces of the device.
- Never use Acetone or other similar solvents for cleaning.
- Never knock or drop the Video Endoscope.
- Keep Video Endoscope away from direct sun-light, heat and extreme humidity.
- Store Video Endoscope inside case when not used.
- Protect the Objective and Ring Light by the supported Rubber Cap when Video Endoscope is not in operation.
- Do not pull back Insertion Tube of the endoscope from your inspection object while camera head tip is bent.
- Only use accessories provided or approved by Optilia.

This equipment is a precision optical device and shall be handled with great care!

3. Description of device

Eagle Eye is an ergonomically designed handheld mobile digital video endoscope system. The equipment incorporates 4-direction articulation, tungsten mesh insertion tube, bright LED-at-the-tip illumination system, large 5.6" color LCD monitor with built-in DVR for recording digital video or still pictures and two exchangeable, rechargeable standard battery cells.



1. On/Off Switch
2. LCD monitor and DVR (Digital Video Recorder)
3. Image and Video capture button
4. Illumination intensity control
5. Tip articulating control (Joystick)
6. Tip articulating control (Joystick) locking screw
7. Battery
8. External 12VDC power input (opposite side of the shown picture)
9. External video output
10. Insertion tube
11. Articulated Camera head

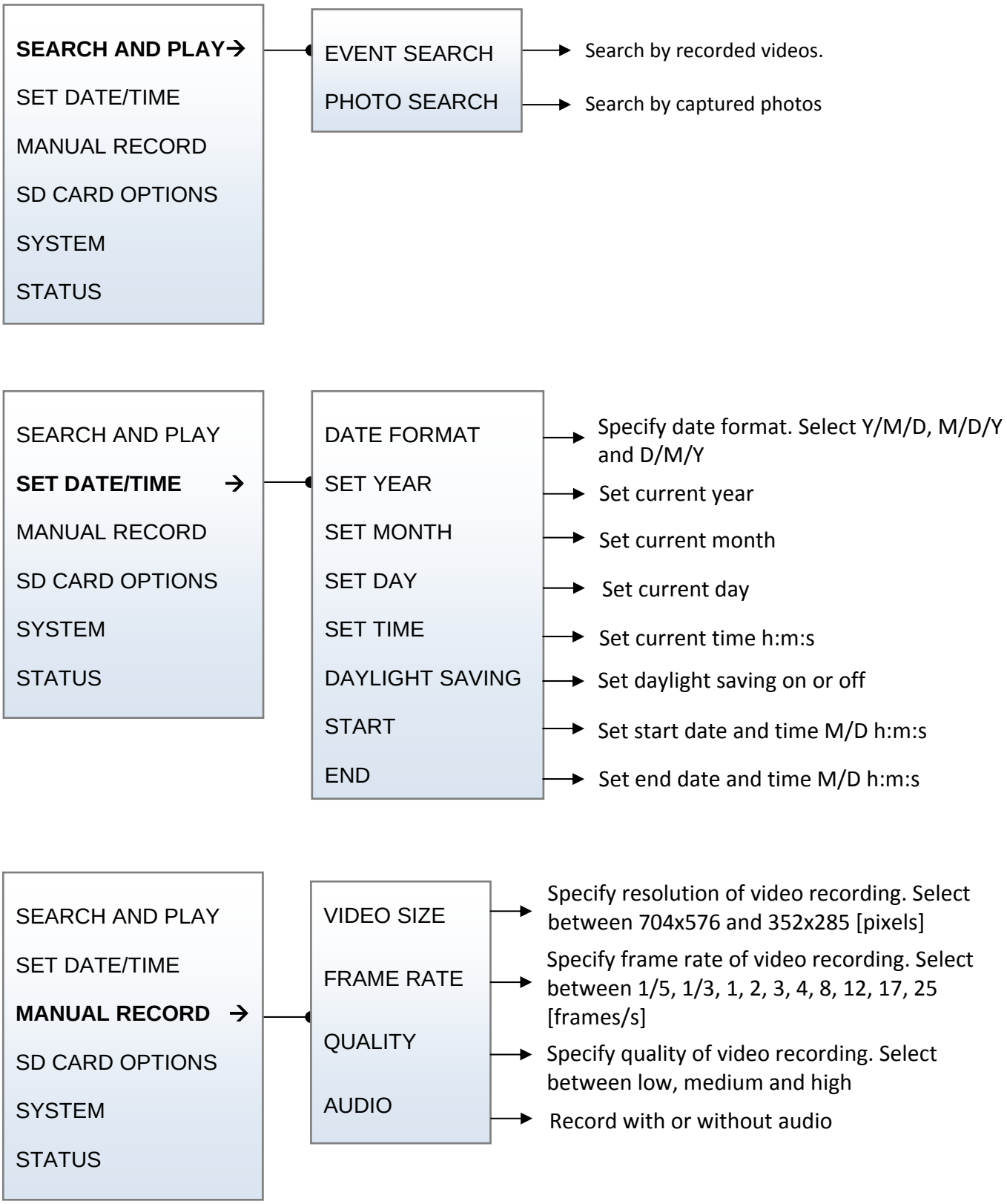
4. Description of Digital Video Recorder (DVR)

Recorded video or pictures are saved on SD-memory card. SD card can be removed and inserted into a PC for downloading recorded pictures and videos.

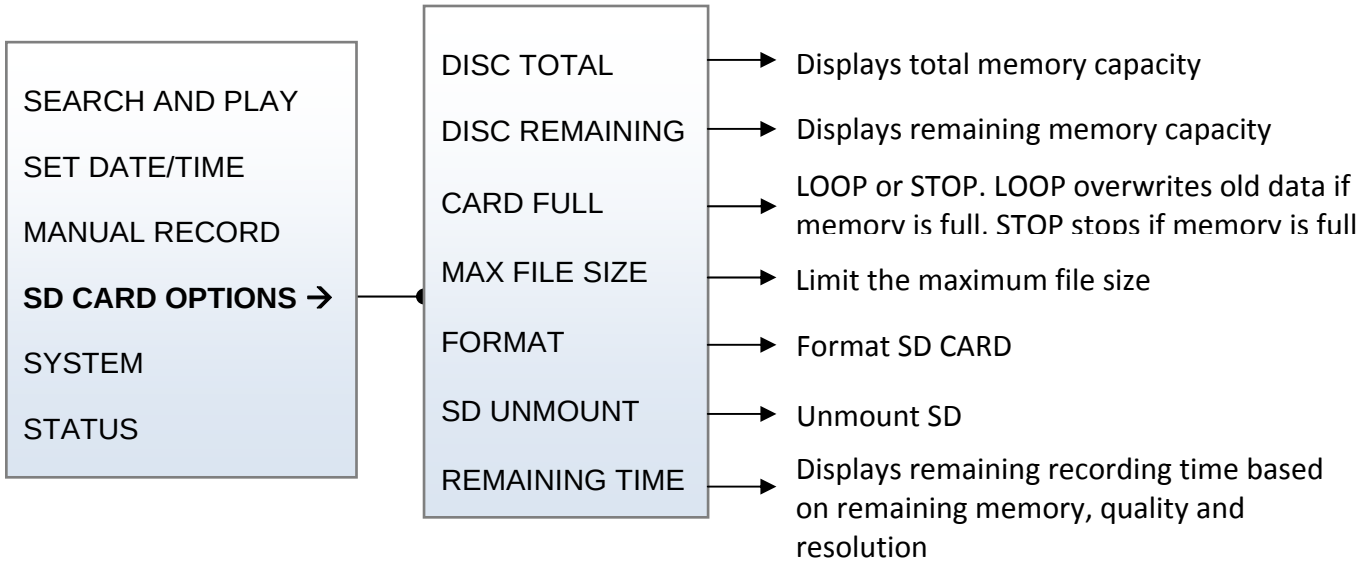
12. 5.6” TFT color monitor
13. SD Memory card slot
14. DVR navigation buttons

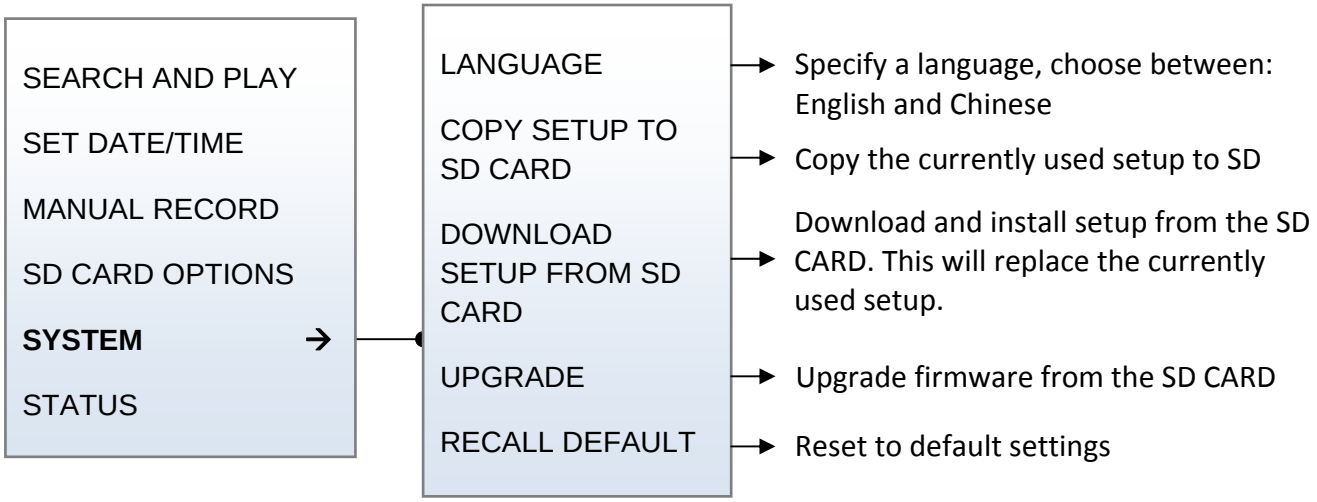
Important: *Note direction of SD card when inserting into the DVR.*

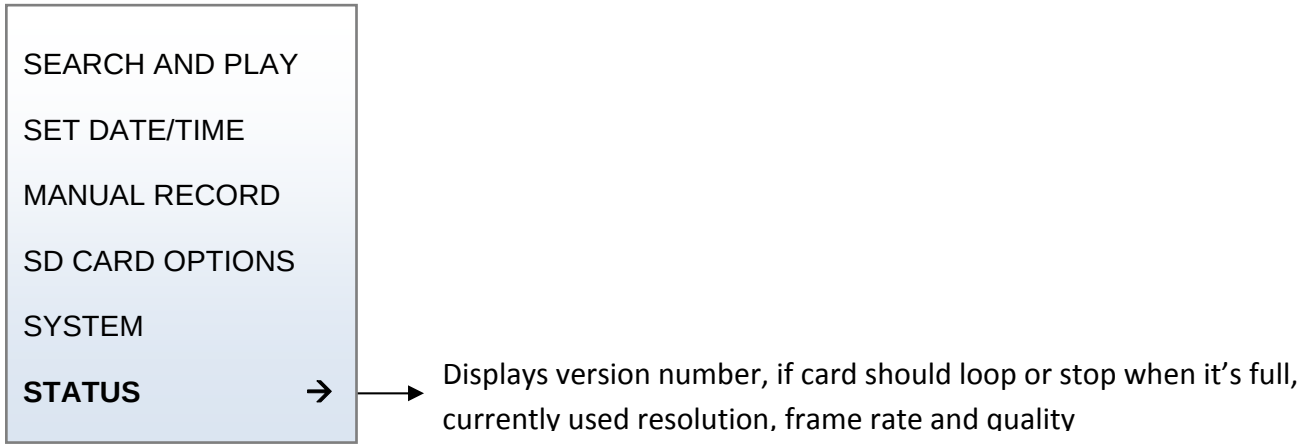
4. Flow chart of Digital Video Recorder



Note: *Audio is not supported in current version of Eagle Eye*


SEARCH AND PLAY
SET DATE/TIME
MANUAL RECORD
SD CARD OPTIONS →
SYSTEM
STATUS
DISC TOTAL
DISC REMAINING
CARD FULL
MAX FILE SIZE
FORMAT
SD UNMOUNT
REMAINING TIME
Displays total memory capacity
Displays remaining memory capacity
LOOP or STOP. LOOP overwrites old data if memory is full. STOP stops if memory is full
Limit the maximum file size
Format SD CARD
Unmount SD
Displays remaining recording time based on remaining memory, quality and resolution


SEARCH AND PLAY
SET DATE/TIME
MANUAL RECORD
SD CARD OPTIONS
SYSTEM →
STATUS
LANGUAGE
COPY SETUP TO SD CARD
DOWNLOAD SETUP FROM SD CARD
UPGRADE
RECALL DEFAULT
Specify a language, choose between: English and Chinese
Copy the currently used setup to SD
Download and install setup from the SD CARD. This will replace the currently used setup.
Upgrade firmware from the SD CARD
Reset to default settings


SEARCH AND PLAY
SET DATE/TIME
MANUAL RECORD
SD CARD OPTIONS
SYSTEM
STATUS →
Displays version number, if card should loop or stop when it's full, currently used resolution, frame rate and quality

5. How to operate the device

- Take out the video endoscope from its transport case.
- Attach both batteries to the video endoscope. Make sure both batteries are fully charged.

Put the battery and push forward!

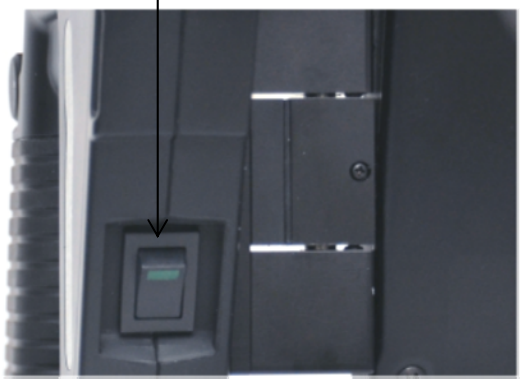
- Remove the protection rubber cap from camera head.

Important: *Camera head including illumination LEDs is the most sensitive part of the device and shall be protected from mechanical impacts or shocks!*

- Turn on the device.

On/off main switch

Illumination Intensity Control



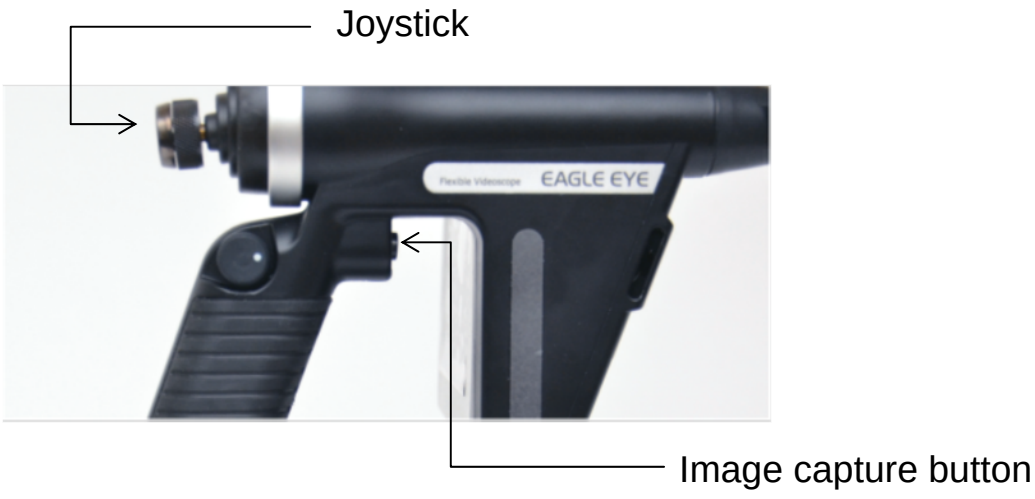
- Insert the tube gently into your object.
- Adjust the light intensity for best picture.

Note: *Camera has automatic gain control; therefore in most cases you can set light intensity of Eagle Eye to maximum!*

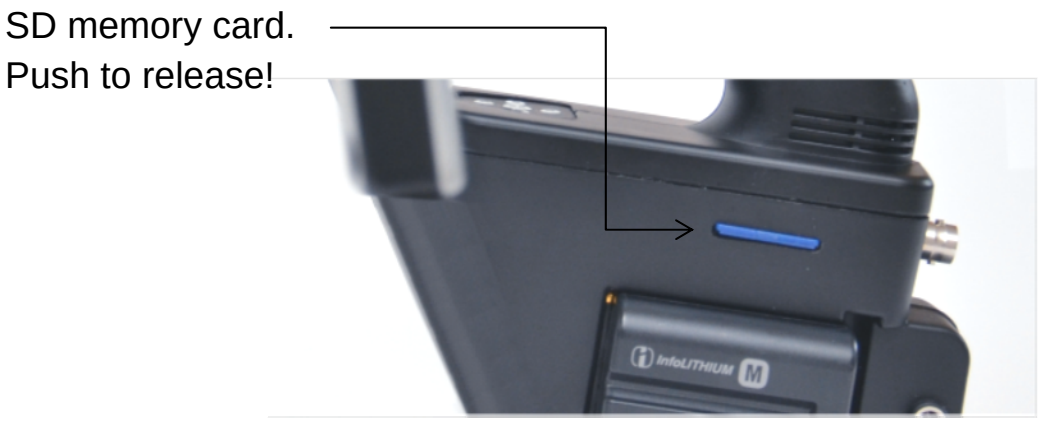
- Adjust focusing distance of the objective lens if necessary. Use the provided adjustment tool you can find in transport case of the video endoscope. (see section 7 below)
- Use the thumb controlled Joystick to articulate camera head.
- If necessary, lock position of the camera head by tightening locking screw of the Joystick.

***Important**: Don´t forget to release the lock before drawing back the insertion tube from you inspecting object. There is a big risk to damage the device if you don´t.*

- Push the image/video capture button shortly to snap a still picture
- Push and hold the image/video capture button for 2 second to start recording video. Push the button again to stop recording video.



***Note:** Your recordings will be saved on the external SD-memory card.*

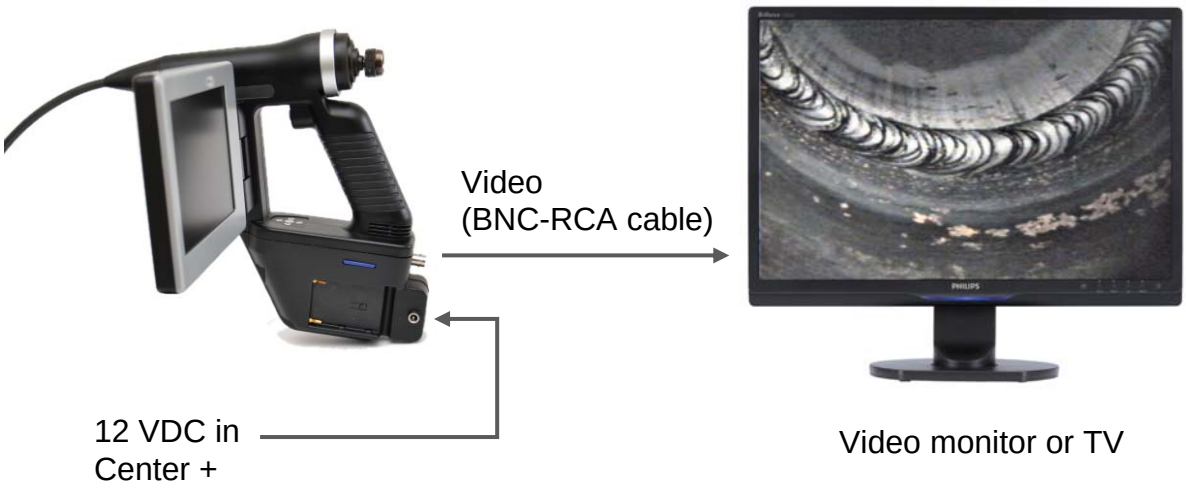


6. How to run the equipment with external Power Supply and External monitor

Eagle Eye can be connected to an external large size monitor if required.

- Remove both battery packs from the equipment
- Plug the power supply to power input connector of the device
- Connect video output signal of the device to external monitor

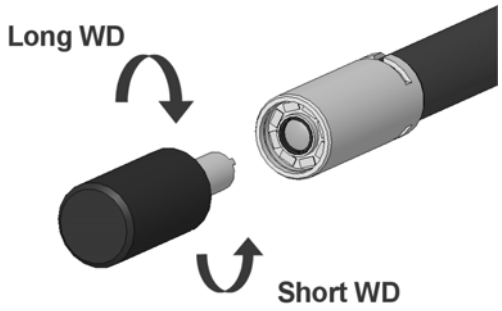
Important: *Do NOT connect external power to device together with batteries!*



Note: *Date, time and other text visible on the built-in 5.6" LCD are not shown on the external monitor.*

7. Adjustment of Working Distance (Optical Magnification)

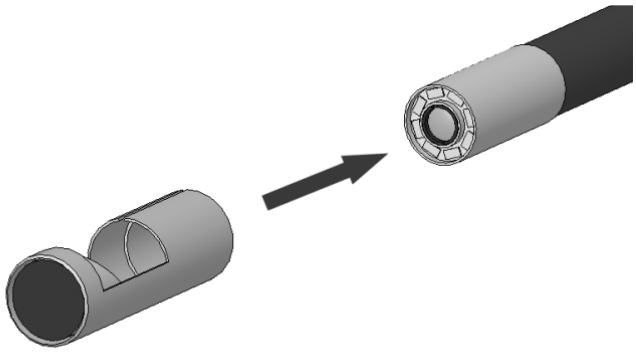
Use the provided adjustment tool for turning Objective Lens in order to adjust Working Distance of the Camera. Turn clockwise to get long working distance (low magnification) and anticlockwise for short working distance (high magnification).



8. Insertion of 90º Mirror Adapter

In some inspection situations, it might be useful to attach the 90º mirror adapter to tip of the Eagle Eye.

Insert the Mirror adapter onto the Camera Head gently. Push it to the stop position!



Note: *Due to wide angle of the optical system, edge of the mirror and its mechanical housing will be visible and Field of View will be reduced.*

9. Specification

Inserting tube length / diameter	1.3m, 3.0m / ϕ7mm (camera head ϕ8mm)
Lighting system	Ultra bright white LED light on camera head
Direction of view	Straight (0°), 90° with mirror adapter
Viewing angle of optics (diagonal)	Approx. 80°
Articulating angle of camera head	70° all directions 3.0m tube. 90° all directions 1.3m tube
Focusing distance	10mm to infinity (Focusing is adjustable by turning the objective lens)
Tip articulation angle	All the direction (360°)
Material of tube	Flexible tungsten braid
Image sensor / Resolution	1/6” CCD / 470 000 pixels
Power	2 rechargeable Li-Ion battery units with charger Sony Li-ion, 11.8Wh model NP-FM500H External power supply, 110-240 V
Power consumption	9.6 W maximum
Operation time	Up to 3 hours with fully charged batteries
External Video Output	Composite (NTSC)
Digital image recording media	SD card, 2.0 -16.0 GB
Video image size	704x576 and 352x285 pixels
Still image size	704x576 pixels
Digital image/ Digital video format	BMP / AVI
LCD Monitor	Colour 5.6”, 960(H)x234(V) pixels, LED backlight
Operation Temperature / Humidity	- 10°C ~+60°C / Rh.0~90% (No condensing)
Operation Temperature / Humidity	- 0°C ~+40°C / Rh.0~90% (No condensing)
External Dimensions	270(L) x 240(H) x 80(W) mm (incl. LCD, excl. insertion tube)
Weight	1.3 m Eagle Eye Approx. 1 400 gr. Inclusive batteries 3.0 m Eagle Eye Approx. 1 700 gr. Inclusive batteries

10. Warranty information

Optilia provides the following non-transferable warranties for the benefit of the original end-use purchaser of a product.

Optilia warrants that all Optilia products shall be free from defects in material and workmanship for one (1) year from the date of purchase.

The above warranties are in lieu of all other warranties, express or implied, including all warranties of merchantability and/or fitness for a particular purpose. Optilia´s liability under these warranties, including any damages sustained by the customer through malfunction or failure of the Optilia product, shall not exceed the amount of the purchase price of the Optilia product, regardless of the extent of any such damage, including any special, consequential, or incidental damages of any kind.

This warranty shall only apply to products in ordinary use. Optilia shall have no obligation under this warranty with respect to damage caused by accident, transportation, neglect, misuse, unauthorized alterations or repair, improper installation, or operating conditions.

All repairs of Products shall take place at Optilia’s facility in Sollentuna, Sweden. Any defective Products shall be returned to Optilia in an adequate shipping container.

Written notice of, and an explanation of the circumstances of, any defect believed to be covered by this agreement shall be provided promptly to Optilia by the customer following discovery of the defect. In satisfaction of its warranty liability, Optilia agrees to take reasonable and prompt action to correct the defect, either by repair or replacement, at its option.

11. Notes:

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